

REMARKS

Status of the Claims:

Claims 1 – 6, 8 – 28 and 31 – 34 are currently pending.

Claims 1 – 6, 8 – 28 and 31 – 34 are currently rejected.

Claim 1 is cancelled herein. Claims 7, 29 and 30 were previously cancelled.

Claims 6, 8, 9, 18 – 20, 27, 28, 31, 33 and 34 are currently amended.

Amendments to the Claims:

No new matter has been introduced by way of the claim amendments.

Claim 1 has been cancelled without prejudice or disclaimer in the interest of expediting prosecution. Applicants are not abandoning the subject matter of claim 1 and reserve rights to file one or more continuation applications directed to the subject matter therein.

Claims 6, 8, 9, 18 – 20, 27, 28, 31, 33 and 34 are presently amended to change their dependencies to reflect the cancellation of claim 1.

I. Claim Rejections Under 35 U.S.C. § 103

Claims 1 – 6, 8 – 28 and 31 – 34 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over WO 02/060812 (hereinafter, *Tour*) in view of United States Patent 3,554,992 (hereinafter, *Lamb*). Office Action page 3, item 4. Applicants respectfully traverse the rejection of these claims in view of the remarks presented herein.

I.1 Standard of Review

The standard of review for establishing obviousness is set forth as follows: "To establish *prima facie* obviousness of a claimed invention, all features must be taught or suggested by the prior art." *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974). Furthermore, "[r]ejections on obviousness grounds cannot be sustained by mere conclusory statements;

instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness". *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741 (2007) citing with approval *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006). In addition, in issuing rejections under 35 U.S.C. § 103(a), the Examiner must consider an invention and the prior art as a whole in accordance with the requisite *Graham* factual inquiries. M.P.E.P. § 2141; *Ruiz v. A.B. Chance Co.* 69 U.S.P.Q.2d 1686, 1690 (Fed. Cir. 2004).

Furthermore, "[a] rationale to support a conclusion that a claim would have been obvious is that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded nothing more than predictable results to one of ordinary skill in the art." M.P.E.P. § 2143.02. Although "[o]bviousness does not require absolute predictability...at least some degree of predictability is required." *Ibid.*

"All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). M.P.E.P. § 2143.03.

1.2 Examiner's Grounds for Rejection

With regard to claims 1, 2, 3 and 10, the Examiner alleges that *Tour* teaches SWNTs functionalized with an aryl chlorine-containing functionality. Office Action page 6. The Examiner also alleges that *Tour* teaches that halogenated SWNTs can participate in reactions with alkyl-lithium reagents via a Grignard reaction mechanism (e.g., see *Tour*, page 2, lines 13 – 18). Office Action page 6. The Examiner also alleges that *Tour* teaches that functionalized SWNTs can undergo polymerization, including anionic polymerization (e.g., see *Tour*, page 31 and claims 125 – 129). Office Action pages 6 – 7.

Regarding claim 10, the Examiner alleges that the feature 'operable for anionic or ring opening polymerization' recited in claim 10 is inherently possessed in *Tour*. Office Action page 7. Regarding claims 33 and 34, the Examiner alleges that these claims recite intended uses, which are not patentably distinguishable. Office Action page 7.

The Examiner acknowledges that *Tour* does not teach the specific mechanism for preparing a polymer. Office Action page 7. However, the Examiner alleges that *Lamb* teaches using a Grignard reaction for initiating a polymerization process. The Examiner alleges that *Lamb* teaches specific types of monomers and various hydrocarbon and ethereal solvents for the polymerization process, including a suggestion of THF. The Examiner alleges that *Lamb* teaches precipitating the polymers with methanol, terminating agents, and concentration and temperature variation that constitute routine optimization.

In view of the foregoing, the Examiner alleges that one of ordinary skill in the art would have been motivated by the expectation of success of preparing a polymer with a Grignard reagent to incorporate the specifics taught by *Lamb* into the teachings of *Tour* to obtain the claimed invention. Office Action page 8.

I.3 Examiner's Response to Arguments Filed by Applicants on September 17, 2009

The Examiner alleges that Applicants' arguments filed on September 17, 2009 (hereinafter, *Applicants' Response*) are not persuasive. Office Action page 9. In particular, the Examiner cites Figures 1 and 2 of *Applicants' Response*, which the Examiner alleges characterizes the mechanism of the claimed methods in Figure 1 versus the mechanism of *Tour* in Figure 2. Office Action page 9. The Examiner alleges that the argued difference in mechanism ("SN₂ versus nucleophilic substitution") is not supported by the claims as written. Further, the Examiner acknowledges that Figure 1 does not lead to the formation of aryl halide functionalized carbon nanotubes. Office Action page 10.

In further rebuttal to remarks of *Applicants' Response*, the Examiner repeats the assertion that *Tour* teaches aryl chlorine functionalized single-wall carbon nanotubes and that halogenated single-wall carbon nanotubes can participate in reactions with an alkyl-lithium reagent by a Grignard reaction mechanism. Office Action page 11. The Examiner also alleges that Grignard reagents constitute "a reagent" for making Grignard complexes.

I.4 Applicants' Rebuttal of Examiner's Characterization of Remarks in Applicants' Response
Filed September 17, 2009

Applicants respectfully assert that the Examiner has mischaracterized Applicants' comments in *Applicants' Response* filed September 17, 2009. Foremost, Applicants respectfully assert that the Examiner has mischaracterized Figures 1 and 2, which are reproduced from *Applicants' Response* below.

Figure 1

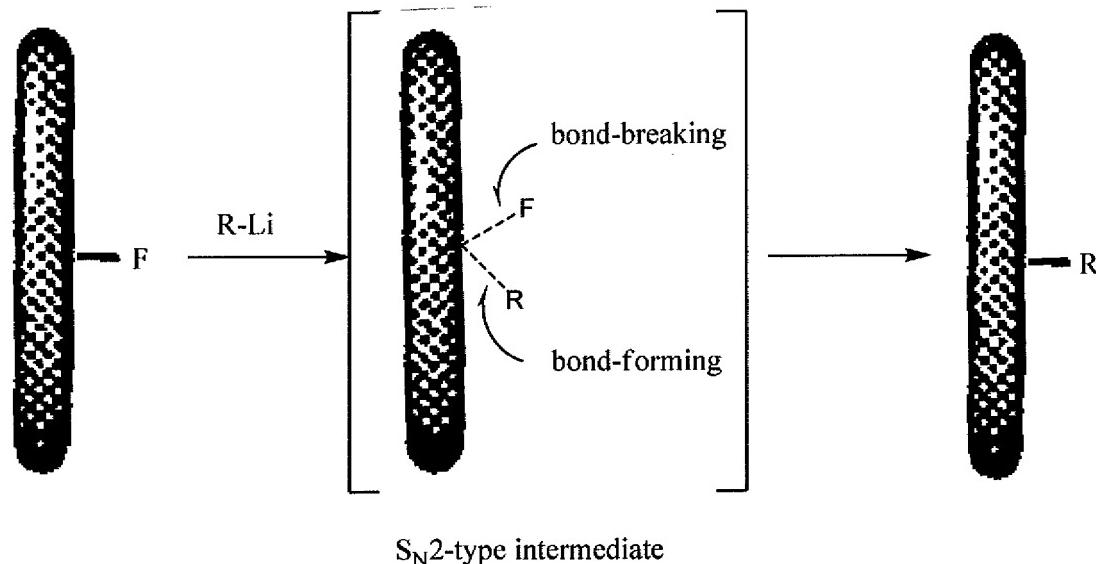
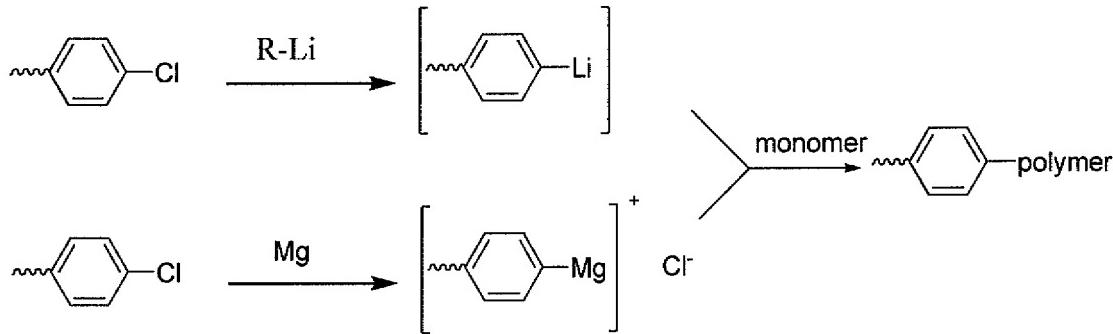


Figure 2



The Examiner alleges that *Applicants' Response* describes that Figure 1 illustrates the mechanism of Applicants' claimed methods and Figure 2 illustrates the mechanism of *Tour*. However, as clearly stated in section I.3.1 of *Applicants' Response*, Figure 1 illustrates the nucleophilic substitution mechanism of *Margrave* (United States Patent 6,827,918, issued December 7, 2004), as referenced by *Tour*, and Figure 2 illustrates the Grignard reaction or halogen-metal exchange reaction of the claimed methods. Reconsideration of Applicants' remarks in view of the Examiner's mischaracterization of Figures 1 and 2 is respectfully requested.

Furthermore, Applicants respectfully submit that Examiner has mischaracterized the reaction mechanisms of both Figures 1 and 2 as nucleophilic substitutions (i.e., "SN₂ versus nucleophilic substitution"; Office Action page 10, line 2). The reaction mechanism of Figure 1 is indeed a nucleophilic substitution (an SN₂ reaction as drawn, where R is the nucleophile). In contrast, the reactions illustrated in Figure 2 are halogen-metal exchange reactions that form an aryl-lithium or aryl-metal bond (e.g., aryl-Mg) of a polymerizable species. The polymerizable species then is operable to initiate an anionic or ring-opening polymerization with a monomer to form a polymer that is covalently bound to the carbon nanotubes, as shown in Figure 2. As also shown in Figure 2, there is no nucleophilic attack taking place in forming the aryl-lithium or aryl-metal bond of the polymerizable species.

The Examiner further alleges that the argued difference in mechanism is not supported by the claims as written. Applicants respectfully traverse this allegation by the Examiner. Applicants acknowledge that a specific reaction mechanism is not recited in the instant claims.

However, Applicants respectfully assert that Figure 2 illustrates features that are claimed limitations of independent claims 2 and 3. Namely, Figure 2 illustrates an aryl-lithium species having an aryl-lithium covalent bond or, more broadly, an aryl-metal species having an aryl-metal covalent bond. Furthermore, Figure 2 illustrates a polymer that is covalently bound to the carbon nanotubes through the aryl group. As required by *In re Wilson*, "[all] words in a claim must be considered in judging the patentability of that claim against the prior art." As further discussed for each claim hereinbelow, the claimed limitations illustrated in Figure 2 for claims 2 and 3, as well as the claimed limitations of claim 10, are not taught or suggested by the combination of *Tour* and *Lamb*.

In contrast to the halogen-metal exchange reactions of Figure 2, Figure 1 illustrates the reaction of sidewall fluorinated single-wall carbon nanotubes with an alkyl lithium reagent via a nucleophilic substitution reaction. In short, the teachings of *Margrave*, as referenced by *Tour*, even when combined with *Lamb*, do not satisfy the limitations of claims 2 or 3, since a polymerizable species having an aryl-lithium or aryl-metal covalent bond is not formed, as required by the claims. Furthermore, the nucleophilic substitution reaction illustrated in Figure 1 does not suggest that aryl halide functionalized carbon nanotubes will also be reactive with an alkyl lithium reagent, ultimately leading to formation of a polymer that is covalently bound to the carbon nanotubes. Further remarks on these points are also presented hereinbelow.

Applicants fail to understand the significance of the Examiner's statement that a Grignard reagent is "a reagent" for making Grignard complexes. Office Action page 11. Applicants further address the differences between a Grignard complex and a Grignard reagent in relation to Applicants' claims hereinbelow.

I.4 Applicants' Rebuttal of Examiner's Grounds of Rejection

Applicants respectfully traverse the instant rejection, and previous remarks made in *Applicants' Response* filed September 17, 2009 are reiterated *in toto*. Applicants hereinafter further summarize and clarify the previous remarks of *Applicants' Response*. Applicants also present new arguments regarding the non-obviousness of each claim.

I.4.1 Tour Does Not Teach or Suggest a Grignard Reaction Mechanism of Halogenated SWNTs

Applicants respectfully submit that the Examiner has mischaracterized *Tour* in stating that this reference teaches a reaction of halogenated SWNTs with an alkyl-lithium reagent via a Grignard reaction mechanism. As clearly shown by Figure 1 herein, *Margrave*, as referenced by *Tour*, teaches a nucleophilic substitution reaction, not a Grignard reaction mechanism. For the nucleophilic substitution reaction of Figure 1, R becomes bonded to the carbon nanotube, and F is ejected as a leaving group. For a Grignard reaction mechanism, a carbon nanotube-metal covalent bond would be formed, and as clearly shown by Figure 1 herein, there is no covalent bond formed between the carbon nanotube and the metal. In contrast to Figure 1, for the claimed reactions illustrated in Figure 2 herein, R does not become bonded to the carbon nanotube, and there is a covalent bond formed between the carbon nanotube and the metal through the aryl group.

Furthermore, the teachings of *Margrave*, as referenced by *Tour*, do not involve the reaction of aryl halide functionalized carbon nanotubes, since the fluorine is directly attached to the carbon nanotube. Applicants respectfully assert that there would be an element of unpredictability involved, since one of ordinary skill in the art could not predict the reactivity of an aryl chloride, bromide or iodide functionalized carbon nanotube based on the reactivity of sidewall fluorinated single-wall carbon nanotubes. There is no teaching or suggestion in the combination of *Tour* and *Lamb* that sidewall fluorinated single-wall carbon nanotubes may react by a Grignard reaction mechanism, nor is there a teaching or suggestion of such a mechanism in aryl halide functionalized carbon nanotubes. Although *Tour* does teach aryl halide functionalized carbon nanotubes, such as those shown in Figure 15 therein, there is no teaching or suggestion of forming aryl-lithium or aryl-metal bonds through reaction of the aryl halide, as required by the claims.

I.4.2 Lamb Does Not Teach or Suggest Initiating a Polymerization with a Grignard Reagent

Applicants also respectfully submit that the Examiner has mischaracterized *Lamb* in stating that this reference teaches a Grignard reaction for initiating a polymerization process.

Lamb clearly teaches that a Grignard complex mounted on a solid support, not a Grignard reagent, is used to initiate the polymerization process (see *Lamb*, Abstract and Col. 2, lines 1 – 6). *Lamb* teaches that the Grignard complex has a formula RXMg(hal), wherein (hal) is a halogen and X is oxygen, sulfur, selenium or tellurium. *Lamb* expressly teaches that the Grignard complex is formed by the reaction of a Grignard reagent (R'Mg(hal)) with an olefinic oxide or compound containing an unsaturated linkage (see *Lamb*, Column 2, lines 8 – 15). For example, *Lamb* teaches reactions of Grignard reagents with nitriles, nitroso compounds, aldehydes, ketones, esters, inorganic compounds and olefinic oxides to form the Grignard complex (see *Lamb*, column 2, lines 25 – 66).

Furthermore, Applicants respectfully assert that the step of forming the Grignard complex of *Lamb* is separate from the step of polymerization. For example, the Examples of *Lamb* clearly set forth deposition of the Grignard complex on a column, followed by polymerization of a monomer in a separate step using the column. Since *Lamb* clearly teaches that the steps of forming the Grignard complex and polymerizing are separate, it follows that *Lamb* does not teach or suggest initiating a polymerization reaction using a Grignard reagent alone. The Grignard complex must be formed from a Grignard reagent before the polymerization process can be started. Nowhere is it taught or suggest in *Lamb* that a Grignard reagent alone may be used to initiate a polymerization process.

As noted above, a Grignard complex has a formula RXMg(hal), wherein (hal) is a halogen and X is oxygen, sulfur, selenium or tellurium. In contrast, a Grignard reagent has a formula (R'Mg(hal)) before reaction with an olefinic oxide or compound containing an unsaturated linkage to form a Grignard complex. Another way of viewing these two formulae is to consider the formal positive and negative charges contained thereon. As previously established by Applicants, the Grignard complex of *Lamb* is a simple salt containing a magnesium cation and an anion of an organic addition product. For example, when X is oxygen and hal is Cl, the formula for the Grignard complex may be rewritten and the formal charges distributed as follows: $\text{R-O}^{\cdot}\text{Mg}^{++}\text{Cl}^-$. In contrast, for a Grignard reagent where hal is Cl, the formula for the Grignard reagent may be rewritten and the formal charges distributed as follows: $\text{R}^{\cdot}\text{-Mg}^{++}\text{Cl}^-$. As can be clearly seen from the formulas showing the formal charges, the

R group in the **Grignard complex** does not bear a formal negative charge, in contrast to the **Grignard reagent**, which **does** bear a formal negative charge on the R group. In the **Grignard complex**, the formal negative charge is borne by the oxygen (i.e., X in the generic formula). In both the Grignard reagent and the Grignard complex hal is a spectator ion.

Applicants respectfully assert that one of ordinary skill in the art will recognize that **Grignard complexes** and **Grignard reagents** are differentiated by their charge distribution. Foremost, the formal charge is localized on different atoms in Grignard reagents and Grignard complexes, namely R⁻ in a **Grignard reagent** and R-O⁻ in a **Grignard complex**. Furthermore, R⁻ and R-O⁻ are differentiated by their hardness in a Lewis base sense. Applicants respectfully assert that one of ordinary skill in the art will further appreciate that this difference in hardness will lead to differences in reactivity with molecules of varying hardness. For example, in general, softer bases tend to react more readily with softer acids, and, correspondingly, harder bases react preferentially with harder acids. Given the inherent difference in Lewis base hardness between a Grignard complex and a Grignard reagent, Applicants respectfully assert that one of ordinary skill in the art would not be able to predict whether a Grignard reagent would initiate a polymerization reaction in the same way as a Grignard complex based on the teachings of *Lamb*. In other words, initiation of a polymerization reaction with a **Grignard reagent** is not a predictable result based on the combined teachings of *Tour* and *Lamb*.

I.5 Independent Claim 2 is Not Obvious

Applicants respectfully assert that independent claim 2 is not obvious, since *Tour* and *Lamb* fail to teach or suggest all of the claim limitations. Each element of claim 2 not taught or suggested by *Tour* and *Lamb* is outlined in more detail hereinbelow.

I.5.1 Tour and Lamb Do Not Teach or Suggest the Reaction of an Alkyllithium Species With Aryl Halide Functionalized Carbon Nanotubes to Form Aryl-Lithium Covalent Bonds

Although *Tour* does teach aryl halide functionalized carbon nanotubes (for example, *Tour* Figure 15) and the use of functionalized carbon nanotubes in anionic and ring-opening polymerization (for example, see *Tour* page 22, lines 3 – 5), Applicants respectfully assert that

Tour and *Lamb* do not teach or suggest a reaction of an alkylolithium species with aryl halide functionalized carbon nanotubes to form aryl-lithium covalent bonds, which initiate the anionic or ring-opening polymerization. *Tour* is silent regarding how an aryl halide functionalized carbon nanotube may be transformed into a polymerizable species, particularly by forming aryl-lithium covalent bonds. As noted hereinabove, the reaction of sidewall fluorinated single-wall carbon nanotubes with R-Li does not generate an aryl-lithium covalent bond, nor may such a reaction be used to predict the reactivity of an alkylolithium reagent with aryl halide functionalized carbon nanotubes.

Lamb fails to rectify the noted deficiencies of *Tour*, since *Lamb* is silent regarding alkylolithium reagents. Hence, the combination of *Lamb* and *Tour* does not teach or suggest formation of a polymerizable species having aryl-lithium covalent bonds. Furthermore, *Lamb* teaches a Grignard complex rather than a Grignard reagent. Even if an alkylolithium reagent and a Grignard complex were obvious expedients of one another, there is no teaching or suggestion in either *Tour* or *Lamb* that a Grignard complex (or an alkylolithium reagent) may react with aryl halide functionalized carbon nanotubes to form aryl-lithium covalent bonds, such as those required by the claim.

I.5.2 Lamb Does Not Teach or Suggest a Polymer That is Covalently Bound to the Carbon Nanotubes

Applicants further respectfully assert that if one were to form the **Grignard complex** of *Lamb* from the aryl halide functionalized carbon nanotubes of *Tour*, then a polymer-carbon nanotube material having the polymer covalently bound to the carbon nanotubes would **not** be produced.

Foremost, *Lamb* expressly describes the **Grignard complex** as a polymerization **catalyst** (for example, see *Lamb*, Abstract), which implies that the Grignard complex does not become part of the polymer. As defined in The American Heritage Dictionary of the English Language, 4th Edition, Houghton-Mifflin, 2009, a catalyst is "**a substance, usually used in small amounts relative to the reactants, that modifies and increases the rate of a reaction without being consumed in the process**" (emphasis added). A polymerization "catalyst" that becomes part of

the polymer would necessarily be consumed. Since the Grignard complex of *Lamb* is not consumed, it follows that the proposed combination of *Tour* and *Lamb* would **not** covalently bond the polymer to the carbon nanotubes. Additionally, *Lamb* further implies that the Grignard complex does not become attached to the polymer, since *Lamb* teaches in Col. 4, lines 8 – 9 that "separation of the catalyst and the polymer solution does not require a separate step." Separation of a Grignard complex and a polymer that are bonded together would implicitly require additional separation steps.

In view of the foregoing, even if one were to form the Grignard complex of *Lamb* on the aryl halide functionalized carbon nanotubes of *Tour*, Applicants respectfully assert that this combination would **not** produce a polymer that is covalently bound to the carbon nanotubes, as required by the claim.

I.5.3 Conclusions: Claim 2

In view of the foregoing remarks, Applicants respectfully assert that claim 2 is not obvious, since all claim elements are not taught or suggested. Claims 6, 8, 9, 18 – 28 and 31 – 34 depend either directly or indirectly from non-obvious claim 2 and are not obvious for at least the same reasons. *In re Fine*, 837 F.2d 1071, 5 U.S.PQ.2d 1596 (Fed. Cir. 1988). Therefore, Applicants respectfully request reconsideration and the withdrawal of the Examiner's rejection of these claims under 35 U.S.C. § 103(a).

I.6 Independent Claim 3 is Not Obvious

Applicants respectfully assert that independent claim 3 is not obvious, since *Tour* and *Lamb* fail to teach or suggest all of the claim limitations. Each element of claim 3 not taught or suggested by *Tour* and *Lamb* is outlined in more detail hereinbelow.

I.6.1 Tour and Lamb Do Not Teach or Suggest the Reaction of a Metal With Aryl Halide Functionalized Carbon Nanotubes to Form Aryl-Metal Covalent Bonds

As noted above, although *Tour* does teach aryl halide functionalized carbon nanotubes and the use of functionalized carbon nanotubes in anionic and ring-opening polymerization,

Applicants respectfully assert that *Tour* and *Lamb* do not teach or suggest a reaction of a metal with the aryl halide functionalized carbon nanotubes to form aryl-metal covalent bonds, which initiate the anionic or ring-opening polymerization. As also noted above, *Tour* is silent regarding how an aryl halide functionalized carbon nanotubes may be transformed into a polymerizable species, particularly by forming aryl-metal covalent bonds.

Although *Lamb* may suggest that an aryl halide can be reacted with magnesium to form a **Grignard reagent** having an aryl-magnesium bond, *Lamb* does not teach or suggest that the Grignard reagent so formed is a polymerizable species or even capable of initiating polymerization. Instead, *Lamb* teaches that the **Grignard reagent** is further transformed into a **Grignard complex**, which is a polymerization catalyst. Furthermore, the **Grignard complex** of *Lamb* does not satisfy the claim limitation requiring that the polymerizable species has **aryl-metal covalent bonds**. As heretofore described, the **Grignard complex** is a simple salt in which the magnesium is present as a cation, which is not covalently bonded to an organic group.

I.6.2 Lamb Does Not Teach or Suggest a Polymer that is Covalently Bound to the Carbon Nanotubes

Applicants further respectfully assert that even if one were to form the **Grignard complex** of *Lamb* from the aryl halide functionalized carbon nanotubes of *Tour*, then a polymer-carbon nanotube material having the polymer covalently bound to the carbon nanotubes would **not** be produced. As set forth hereinabove, *Lamb's* description of the **Grignard complex** as a polymerization **catalyst** expressly implies that the Grignard complex does **not** become part of the polymer. Since the **Grignard complex** of *Lamb* is not consumed, it follows that the proposed combination of *Tour* and *Lamb* would **not** covalently bond the polymer to the carbon nanotubes.

In view of the foregoing, even if one were to form the **Grignard complex** of *Lamb* on the aryl halide functionalized carbon nanotubes of *Tour*, Applicants respectfully assert that this combination would **not** produce a polymer that is covalently bound to the carbon nanotubes, as required by the claim.

I.6.3 Conclusions: Claim 3

In view of the foregoing remarks, Applicants respectfully assert that independent claim 3 is not obvious, since all claim elements are not taught or suggested. Claims 4 – 6, 8, 9, 18 – 28 and 31 – 34 depend either directly or indirectly from non-obvious claim 3 and are not obvious for at least the same reasons. Therefore, Applicants respectfully request reconsideration and the withdrawal of the Examiner's rejection of these claims under 35 U.S.C. § 103(a).

I.7 Independent Claim 10 is Not Obvious

Applicants respectfully assert that independent claim 10 is not obvious, since *Tour* and *Lamb* fail to teach or suggest all of the claim limitations. Each element of claim 10 not taught or suggested by *Tour* and *Lamb* is outlined in more detail hereinbelow.

I.7.1 Tour and Lamb Do Not Teach or Suggest Deprotonation of Nucleation Sites to Form Initiator Groups

Applicants respectfully assert that *Tour* and *Lamb* are both silent regarding the deprotonation of nucleation sites to form initiator groups. As set forth in the instant specification in paragraph [0028], nucleation sites are "**treated with a deprotonation agent to deprotonate the nucleation sites to form initiator groups for polymerization**" (emphasis added). In view of the instant specification and as recited in the claim, it follows that an initiator group must be formed by deprotonation in order for polymerization to occur.

Neither *Tour* nor *Lamb* teach or suggest deprotonation to form initiator groups. *Tour* teaches various functionalized carbon nanotubes that were prepared by reaction with a diazonium species, but *Tour* does not teach or suggest that any of these functionalized carbon nanotubes may be deprotonated to form initiator groups. Furthermore, the nucleophilic substitution of *Margrave*, referenced in *Tour* and illustrated in Figure 1 herein, does not involve a deprotonation to form initiator groups.

Likewise, *Lamb* teaches formation of a Grignard reagent, which is subsequently transformed into a Grignard complex. The Grignard complex of *Lamb* is formed by nucleophilic

addition of a Grignard reagent to an olefinic oxide or compound containing an unsaturated linkage and does **not** involve a deprotonation. Furthermore, as also set forth hereinabove, the Grignard complex of *Lamb* is not itself polymerizable and is simply a polymerization catalyst. As claimed, an initiator group is a polymerizable group.

In view of the foregoing, Applicants respectfully assert that *Tour* and *Lamb* do not teach or suggest deprotonation to form initiator groups, as required by the claim.

I.7.2 Tour and Lamb Do Not Teach or Suggest Polymerization of Initiator Groups

Since *Tour* and *Lamb* do not teach or suggest initiator groups formed through deprotonation, it follows that the references in combination also do not teach or suggest the polymerization of initiator groups, as required by the claim. Furthermore, as set forth hereinabove, the Examiner's proposed combination of the Grignard complex of *Lamb* with the functionalized carbon nanotubes of *Tour* would not lead to a polymer that is covalently bound to the carbon nanotubes, as also required by the instant claim.

I.7.3 Conclusions: Claim 10

In view of the foregoing remarks, Applicants respectfully assert that independent claim 10 is not obvious, since all claim elements are not taught or suggested. Claims 11 – 28 and 31 – 34 depend either directly or indirectly from non-obvious claim 10 and are not obvious for at least the same reasons. Therefore, Applicants respectfully request reconsideration and the withdrawal of the Examiner's rejection of these claims under 35 U.S.C. § 103(a).

I.8 Cancellation of Claim 1

Applicants have cancelled claim 1 in the present response. Hence, the Examiner's rejection of this claim under 35 U.S.C. § 103(a) is rendered moot.

CONCLUSIONS

Claims 2 – 6, 8 – 28 and 31 – 34 remain pending in the application. Applicants respectfully submit that claims 2 – 6, 8 – 28 and 31 – 34, as these claims presently stand amended, are in a condition for allowance based on the remarks presented hereinabove.

If additional fees are due and are not included, the Director is hereby authorized to charge any fees or credit any overpayment to Deposit Account Number 23-2426 of Winstead PC (referencing matter 11321-P068WOUS).

If the Examiner has any questions or comments concerning this paper or the present application in general, the Examiner is invited to call the undersigned at 713-650-2663.

Respectfully submitted,

WINSTEAD PC

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